

## **MEMORANDUM**

**TO:** Chas Ariss, P.E., Wastewater Program Manager  
Erick Neher, Regional Administrator  
Greg Eager, P.E., Regional Engineering Manager

**FROM:** Tom Rackow, P.E., Idaho Falls Regional Office

**DATE:** March 9, 2016

**SUBJECT:** I-010-06 Idahoan Foods – Idaho Falls Facility, Addendum to the September 11, 2015 Staff Analysis supporting expansion of the reuse acreage.

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### **Executive Summary**

The purpose of this addendum to the September 11, 2015 Staff Analysis is to present an analysis supporting a request by Idahoan Foods to modify the draft reuse permit to incorporate an 33.1-acre expansion of the reuse site prior to final permit issuance. This addendum only addresses the proposed 33.1-acre expansion. Please refer to the September 11, 2015 Staff Analysis for a complete site characterization and evaluation of the entire reuse site and the recommendations for the new permit.

Draft reuse permit no. I-010-06 for the Idahoan Foods – Idaho Falls facility was issued for public comment on September 11, 2015. At that time Idahoan requested a routine permit renewal of the existing acreage with the same permit limits and conditions as the current permit LA-000010-05. The comment period closed on October 9, 2015. No public comments were received. One minor comment was provided by Idahoan regarding personnel changes at the facility.

On October 2, 2015, just prior to the closure of the draft permit comment period and prior to DEQ issuing the final permit, Idahoan Foods contacted DEQ to request that the new permit be modified to expand the reuse site by 33.1-acres (increasing total reuse acreage from 202.3 to 235.4 acres). Idahoan is proposing to reinstate the old, unused Reuse Field H (now referred to as Management Unit #4 or MU-04), and add a small pivot to the unused portion on the south end of Management Unit #1.

Engineering plans and specifications for installation of the recycled water infrastructure to utilize new 20.8-acre MU-04 and the 12.3-acre expansion area within existing Management Unit #1 (for a total MU -01 acreage of 68.9-acres) were approved by DEQ on February 29, 2016.

Field H, now referred to as MU-04, was originally permitted by DEQ in 1996 under permit LA-000010-03 but wastewater distribution infrastructure was never installed to bring the field into service so it was removed from the reuse permit when permit LA-000010-05 was issued in 2009.

The small unused area on the south end of MU-01 has never been permitted as an active portion of the management unit, but was instead used for tail-water and runoff collection and control from the old flood fields prior to 2006. In 2005 and 2006 irrigation upgrades removed the small

flood irrigation fields and replaced them with two large center pivots, which resulted in the small area south of MU-01 being unused since that time. Idahoan proposes to add a small 12.3-acre pivot to the unused area south of pivot #1 in MU-01 and will operate both pivots (the existing Pivot #1a and the new smaller pivot #1b) at the same time to apply irrigation evenly across the entire field as a single, cohesive management unit with one common crop.

The 2005/2006 irrigation upgrades included pipe stubs and adequate pumping capacity in anticipation of adding field H (MU-04) and other areas at some point in the future (now), so no additional pumping is necessary. Flow meters are already in place to monitor MU-04. In addition to the existing flow meter on the mainline for MU-01, one additional meter will be installed on the line extension to the new expansion pivot #1b in order to monitor irrigation rates of both pivots independently and to confirm uniform application across MU-01 both seasons.

Soils on both fields are the same as the existing permitted management units. The northern expansion field MU-04 contains the same Pancheri Silt Loams as MU-01 and MU-02 with a water holding capacity of approximately 8-12 inches to 60-in depth. The soils in the southern expansion area of MU-01 are Bannock Loam with a water holding capacity of 5.4 inches to 60-inch depth, which is slightly less than the Pancheri Silt Loams to the north. However, Idahoan is applying about a 12-inch layer of mixed tare dirt and 'mud' from washing potatoes to level the field and improve soil water holding capacity under the new small pivot #1b in MU-01. Soil samples of the tare dirt and mud indicate it has a water holding capacity of 3.7 inches per foot. So the combined water holding capacity of the Bannock loam plus the tare dirt under the small southern pivot #1b will be approximately the same as the Pancheri Silt Loams to the north. Soil depths and water holding capacities of both expansion sites are approximately the same as the existing management units. Staff recommends the expansion areas be permitted at the same Hydraulic Loading Rates as the existing MU's with a Non-Growing Season hydraulic loading limit of 12.8 in/acre and a Growing Season hydraulic rate that substantially follows the irrigation water requirements (IWR) of the crops.

Soil samples collected by Idahoan to characterize the new expansion field MU-04 show the nutrient status of the field to be at normal agronomic levels similar to the other management units with no elevated constituents of concern at this time, according to the site characterization and engineering report prepared by Schiess And Associates.

Soil samples of the native soils under the new small pivot #1b in MU-01 also appear to be at normal agronomic levels. However, the soil sampling results of the tare dirt and mud mixture being applied under new pivot #1b show high levels of nitrate-nitrogen, ammonium-nitrogen, available phosphorus, potassium, salts, iron, zinc and chloride. A comparison of the tare dirt/mud mixture to the average soil nutrient concentrations in the existing management units is presented in Table 1.

**Table 1. Comparison of Tare Dirt/Mud mixture to average soil chemistry concentrations 2010-2014:**

					Org.	NO3	NH4	Total	Avail.			EC	Na	CEC	Ca	Mg	DTPA	DTPA	Excess					
SMU	HMU	Soil Layer	pH (s.u.)	O.M. (%)	N (lb/ac-ft)	N (ppm)	N (ppm)	P (ppm)	P (ppm)	K (ppm)	SAR	(umhos/cm)	(meq/100g)	(meq/100g)	(meq/100g)	(meq/100g)	Fe (ppm)	Mn (ppm)	Lime (%)	SO4 (ppm)	Zn (ppm)	Cu (ppm)	B (ppm)	Cl (ppm)
SU-01001	MU-01001	0-12	7.4	2.4		15.1	8.0		78.2	450	1.4	1344	0.2	12.5	8.4	2.3	22.2	10.8	0.7	14.3	1.8	0.9	0.8	34.0
		12-24	7.7	1.5		11.9	4.0		65.1	467	1.5	1244	0.2	13.0	8.9	2.3	18.2	10.0	1.8	16.8	1.1	1.3	0.7	32.1
		24-36	8.1	1.2		10.6	3.0		37.9	471	1.5	1122	0.3	13.1	9.1	2.2	12.3	9.4	5.9	22.9	0.8	1.3	0.6	29.9
SU-01002	MU-01002	0-12	7.5	2.3		16.0	7.7		73.7	361	1.3	1156	0.2	12.6	9.0	2.2	20.2	13.9	2.2	12.9	1.9	0.9	0.8	26.1
		12-24	7.7	1.4		10.4	3.9		55.3	310	1.0	889	0.2	12.0	8.6	2.1	15.0	11.5	1.8	10.6	1.0	1.1	0.6	19.2
		24-36	8.0	1.1		8.0	3.1		36.7	291	0.9	833	0.2	12.5	9.2	2.1	13.0	8.7	3.8	10.8	0.7	1.2	0.5	18.9
SU-01003	MU-01003	0-12	7.9	2.0		12.6	5.9		44.8	367	0.7	967	0.2	13.1	9.9	1.8	11.4	8.7	2.7	21.6	1.8	0.9	1.1	16.2
		12-24	8.0	1.5		10.9	4.1		27.9	287	0.7	856	0.2	13.0	10.1	1.7	9.8	7.4	8.2	11.3	0.9	1.0	0.8	17.9
		24-36	8.1	1.1		8.4	2.7		11.1	254	0.8	800	0.2	11.9	9.4	1.5	8.2	6.4	13.0	11.7	0.4	0.6	0.6	19.4
Tare/Mud		0-12	6.4	3.9	60	139	13.5		65	1035		3900	0.2	17.9	9.9	2.8	59.9	7.1	0	73	4.5	0.8	0.8	54

\*\*Tare/Mud consists of one sample, reported 1/25/2016.

\*\*Multiply concentration by 3.7 to estimate nutrient content in lb/ac-ft of soil.

The Schiess & Associates engineering report for the site expansion indicates Idahoan Foods will apply approximately 1-foot of tare dirt/ mud mixture to new pivot #1b. Using a conversion factor of 3.7, the mineralized nitrogen being added to the field in the tare dirt mixture is approximately 560 lb-N/acre which completely satisfies the nitrogen requirements of the first crop that will be grown under pivot #1b this summer. Application of recycled water to the new expansion pivot #1b is not recommended until soil nutrient levels return to normal agronomic levels. The draft permit specifies that a cover crop be planted under pivot #1b and irrigated with fresh-water only, until future soil sampling results verify that soil nutrients have returned to normal agronomic levels.

The southern expansion area of MU-01 is predominantly flat and runoff is not a concern. However, the expansion plans note that an existing berm is already installed around the southern boundary of the property south of MU-01 as a safety factor to contain and control runoff up to a 25-yr, 24-hr storm event to prevent discharges to unpermitted areas. So the existing berm will contain and control any potential runoff from all of MU-01, including the new expansion pivot #1b. The northern expansion field MU-04 contains some sloped areas of concern, but the engineering plans for the expansion area include construction of berms to contain and control runoff equivalent to a 25-yr, 24-hr storm. The plans also call for construction of 'run-on' berms at the top of MU-04 to prevent run-on from neighboring farm fields. Idahoan Food will need to update its Plan of Operation to address the management techniques it will use to prevent or mitigate runoff and erosion in MU-04 as much as possible.

Both expansion areas are adjacent to the currently-permitted management units, and neither area encroaches into the minimum recommended buffer zone setback areas specified in the September 2015 draft permit, with the exception of the southern boundary of the northern expansion field. The northern expansion Field H is sloped from north to south, and the southern boundary of MU-04 is the Great Western Canal so there exists a potential for field runoff reaching the canal if not managed. But as noted earlier the engineering plans for the MU-04 expansion include engineered perimeter berms large enough to contain the equivalent of a 25-yr, 24-hr storm on the reuse field, so mitigation measures are in place. Therefore, staff do not recommend any buffer zone mitigation measures for the expansion areas at this time.

The current network of five monitoring wells are positioned to also track potential impacts from the expansion areas. Monitoring well MW-4 is still up-gradient of all reuse sites. Monitoring

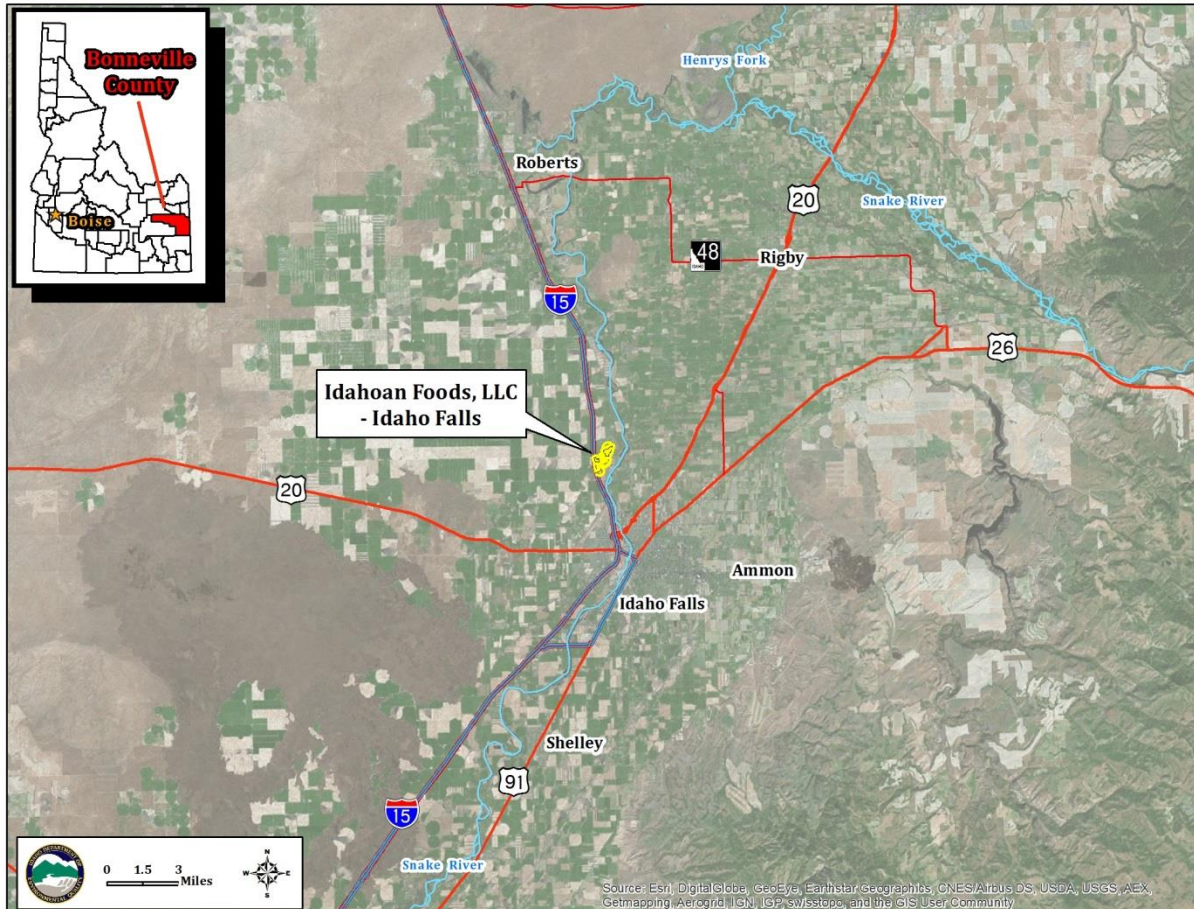
well MW-1 is still positioned down-gradient of the southern expansion area. Additional monitoring wells are not recommended at this time.

Staff Recommend that both new fields adhere to the same monitoring requirements as the other reuse fields (soil quality, hydraulic loading, constituent loading, crop yields, nutrient uptake and removal rates, etc.).

Based on the evaluation of site characteristics and management practices discussed above, it is recommended that the new reuse permit I-010-06 be modified to include the two expansion areas listed above and then be issued to Idahoan Foods, LLC for continued operation of their Idaho Falls reuse facility at currently-permitted loading rates.

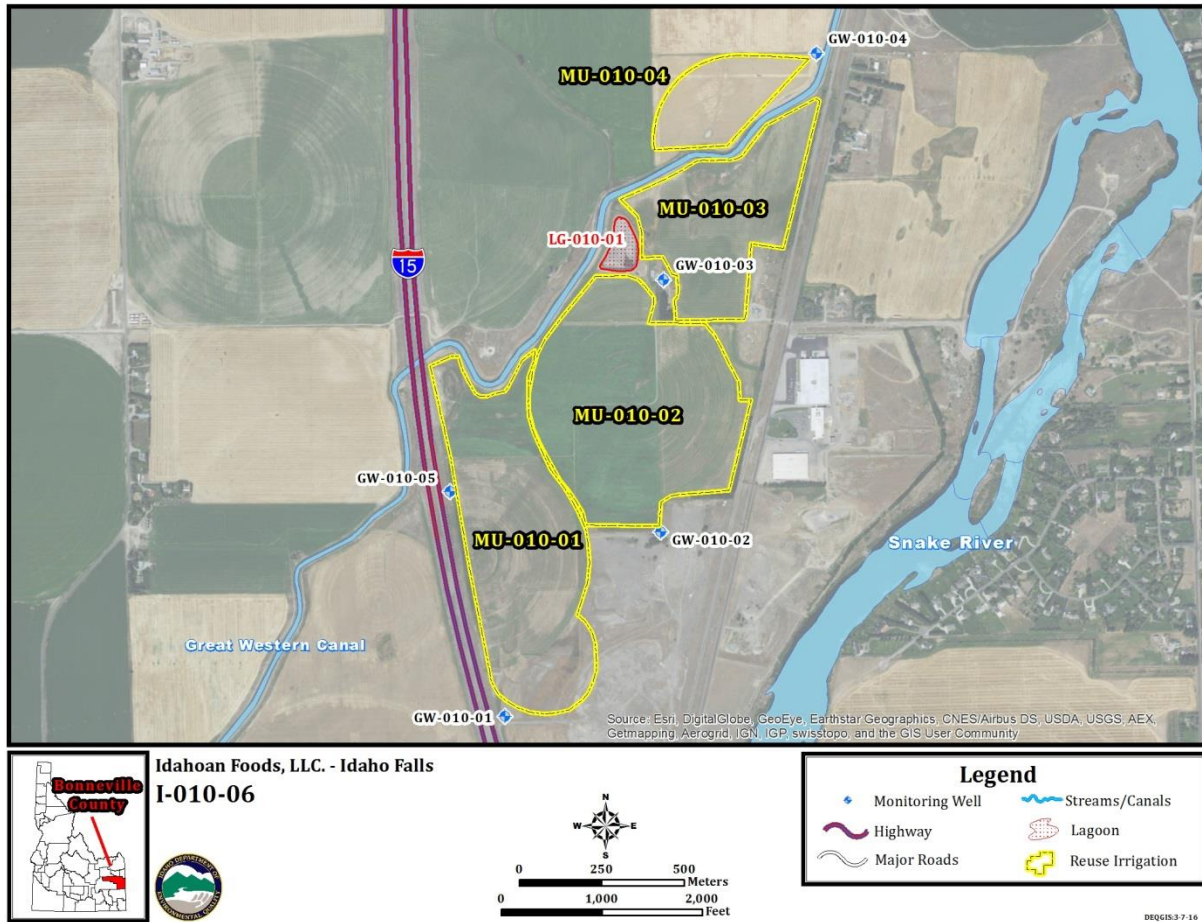
## Appendix A. Site Maps

### Regional Map

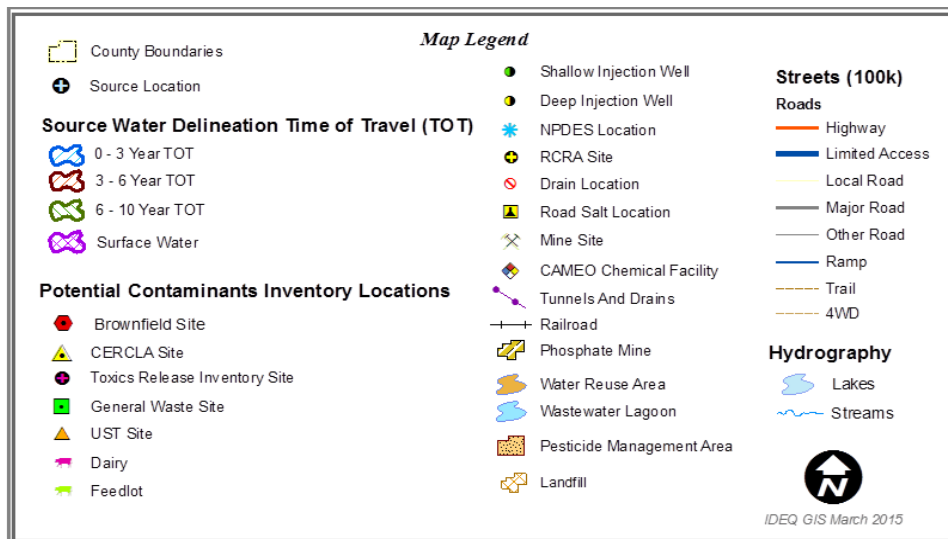
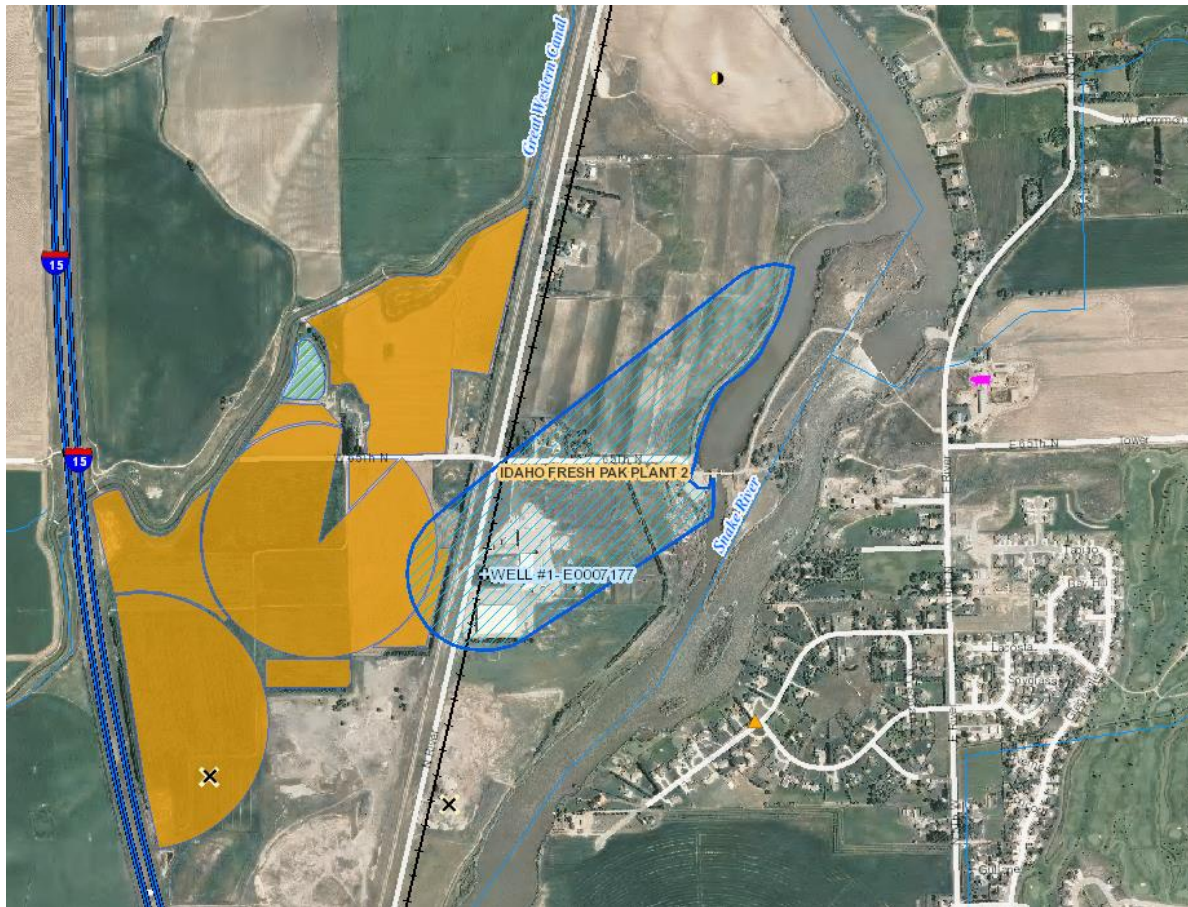




## Facility Map



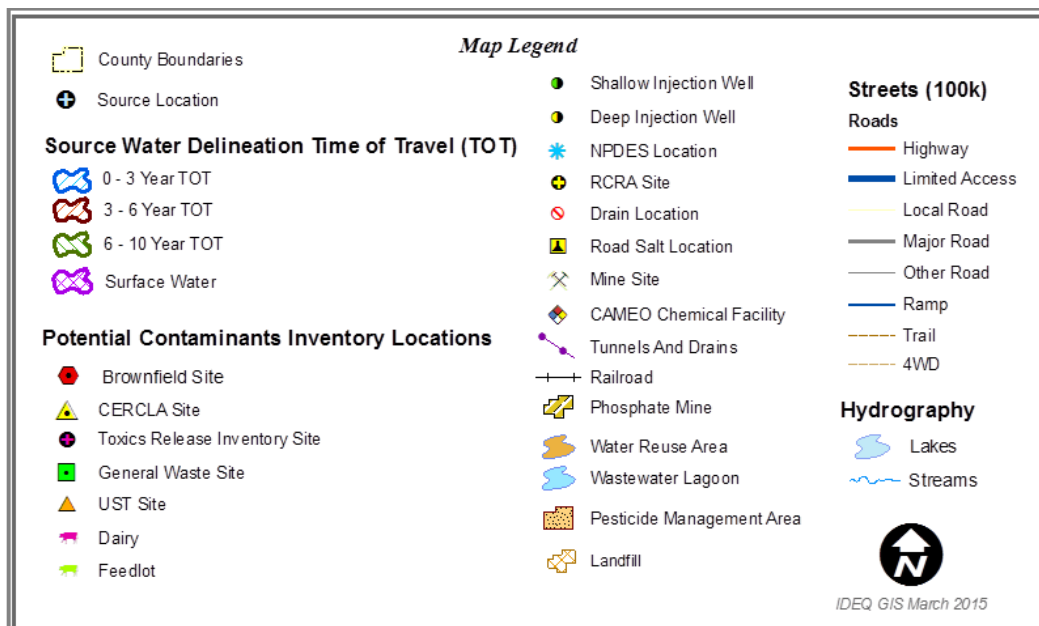
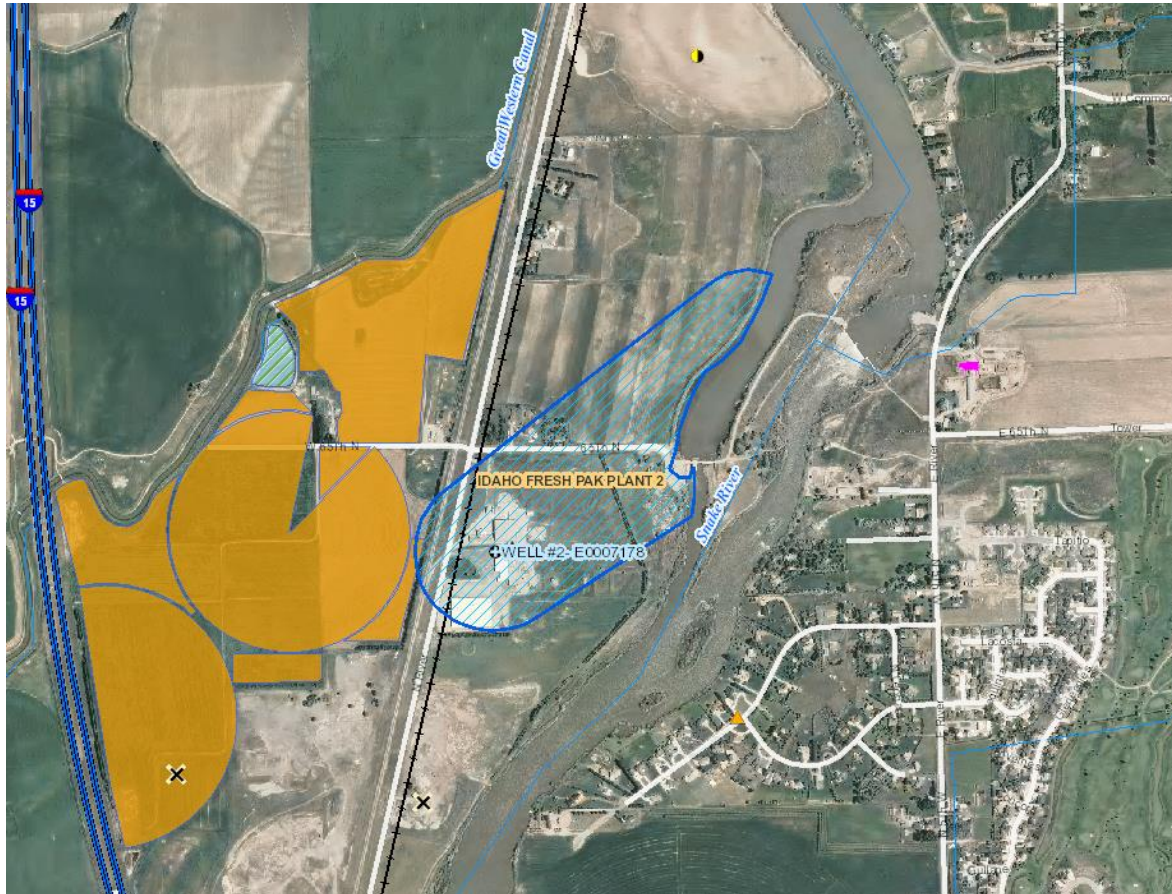
**Idahoan Foods Main Public Water Supply Well and Estimated Capture Zone** (Source: Source Water Assessment Summary Report: Idahoan Foods Idaho Falls Plant, PWS # ID7100083. DEQ, 2001)





**Idahoan Foods Backup Public Water Supply Well #2 and Estimated Capture Zone.**

(Source: Source Water Assessment Summary Report: Idahoan Foods Idaho Falls Plant, PWS #ID7100083. DEQ, 2001).





**May 2014 Ground Water Contours:**

